

# **INTRO TO:**



## **TOPICS:**

- 1) Elements and the Periodic Table**
  - a) Atoms
  - b) Chemical Bonds
- 2) Formation of our Solar System**
  - a) Nebular Hypothesis

# 2.1 Matter

## Elements and the Periodic Table

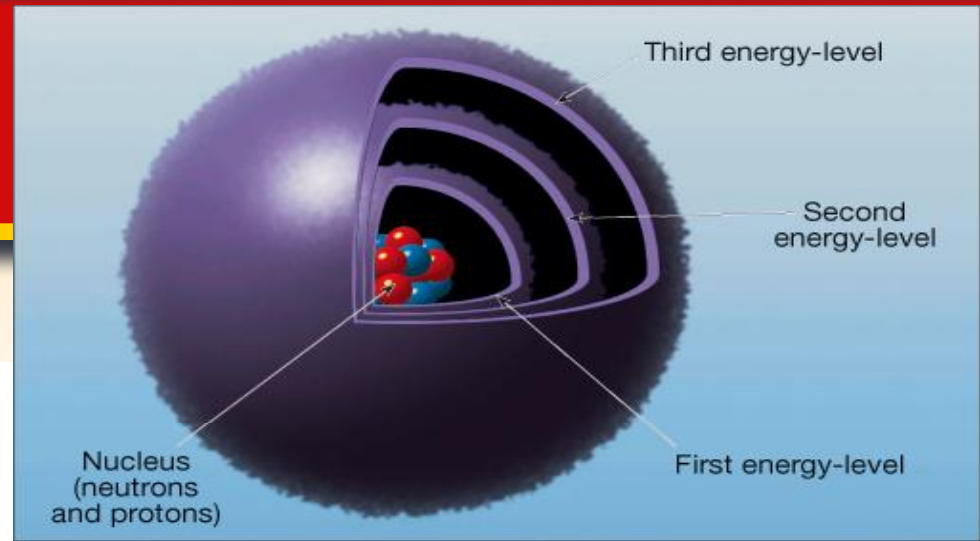
- ◆ **Elements** are the basic building blocks of minerals.
- ◆ Over 100 elements are known.

# 2.1 Matter

## Atoms

- ◆ Smallest particles of matter
- ◆ Have all the characteristics of an element
- ◆ The nucleus is the central part of an atom and contains
  - protons, which have positive electrical charges
  - neutrons, which have neutral electrical charges

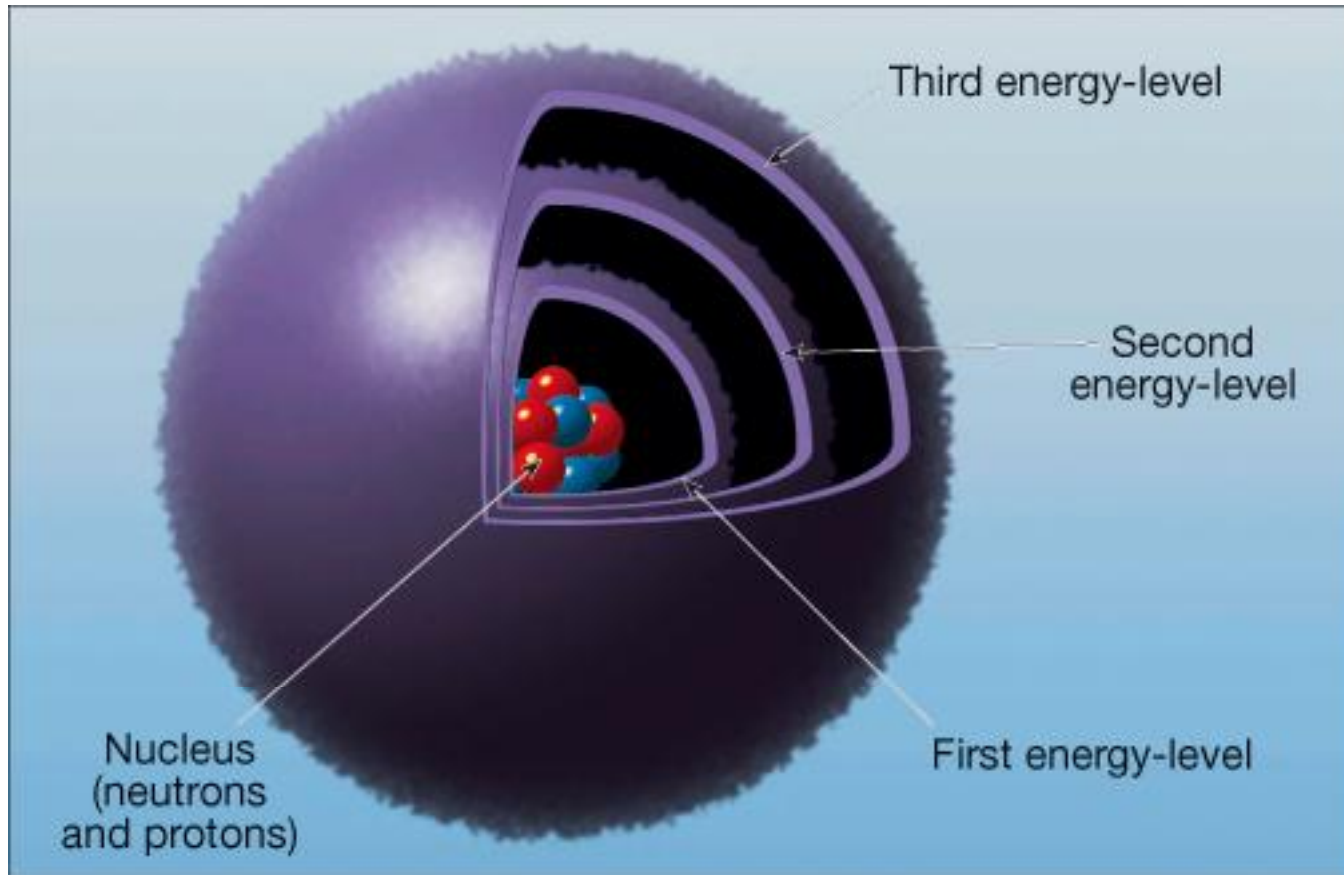
# 2.1 Matter



## Atoms

- ◆ **Energy levels, or shells**
  - surround the nucleus
  - contain electrons—negatively charged particles
- ◆ The **atomic number** is the number of protons in the nucleus of an atom.

# Model of an Atom



# 2.1 Matter

## Why Atoms Bond

- ◆ When an atom's outermost energy level does not contain the maximum number of electrons, the atom is likely to form a **chemical bond** with one or more atoms.
  - A **compound** consists of two or more elements that are chemically combined in specific proportions.
  - An **ion** is an atom that gains or loses electrons.

# 2.1 Matter

## Types of Chemical Bonds

1. **Ionic bonds** form between positive and negative ions.
2. **Covalent bonds** form when atoms share electrons.
3. **Metallic bonds** form when metal ions share electrons.